



### **ABSTRACT**

The present invention relates to a method for preparing a lithium manganese complex oxide  $\text{Li}_{1+x}\text{Mn}_{2-x}\text{O}_4$  ( $0 \leq x \leq 0.12$ ) used as a cathode active material of a lithium or lithium ion secondary battery.

The present invention provides a method for preparing a manganese compound comprising the step of simultaneously applying a mechanical force and heat energy to a manganese compound to remove defects present in particles of the manganese compound and to control the aggregation of particles and the shape of the aggregated particles, a method for preparing a lithium manganese complex oxide with a spinel structure using the manganese compound prepared by the above method as a raw material, and a lithium or lithium ion secondary battery using the lithium manganese complex oxide with a spinel structure prepared by the above method as a cathode active material.

A lithium or lithium ion secondary battery using the lithium manganese complex oxide with a spinel structure prepared from the manganese compound without defects inside particles as a cathode active material has excellent charge/discharge characteristics and cyclic performance.

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